

ADDITIONAL FEE:

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R E M A R K S

The Office Action issued March 2, 2007 has been received and its contents have been carefully considered.

Claim 1 has been amended to more "specifically point out and distinctly claim" the invention as required by 35 USC §112. In particular, the sheet metal panel has been defined as being "self-supporting" and "having two sides and adapted to be irradiated by sunlight on one side."

Further, the insulation core is recited as being "bonded to the sheet metal panel by means of a non-metallic, elastic adhesive layer." A new claim 24 has also been added which defines the adhesive layer as being "made of a reaction adhesive."

Support for this last claim may be found on the penultimate line on page 4 of the application.

As explained on pages 1 and 2 of the application, large the adhesive connections between the sheet metal panel and the capillary tubes of solar panels often break or crack due to the large temperature swings in the environment,

interrupting the heat transfer contact between the panel and these tubes. The principal object of the present invention is to remediate this problem so that the integrity of the self-supporting collector panel is preserved over a wide temperature range.

Claim 1, as amended, recites an improved "flat collector module" which is best illustrated in Fig. 3. Capillary tubes 3 are placed in contact with the surface of an insulation core 4, for example in slots 14, which is bonded to the sheet metal panel 1 by means of a non-metallic, elastic adhesive layer 2. As may be seen, the capillary tubes are at least partially embedded into the adhesive layer between the sheet metal panel and the insulation core.

Claim 1, as now amended, is believed to distinguish patentably over all of the references made of record in this application. Accordingly, the rejections of claim 1, as originally presented, as being anticipated by Deakin U.S. Patent No. 5,167,218 and obvious over Deakin in view of Bloor et al. U.S. Patent No. 4,606,327 and Graham U.S. Patent No. 4,517,271 and Hyman U.S. Patent No. 4,191,169 are respectfully traversed.

Deakin, the principal reference cited and applied against the claims by the Examiner, discloses a solar energy collector having an "absorber plate" formed by spraying molten metal onto an insulating substrate. Fig. 5 of this patent shows the absorber plate 20 formed directly on the insulating material 11 by spraying molten metal. A groove 25 is formed in the insulating material to receive an absorber tube 16. In order to improve adhesion of the sprayed metal absorber plate 20 to the insulating material, an initial base coating 21 has been added to the surface of the insulation 11. To further improve adhesion of the molten absorber plate to the insulating layer 11, an additional layer or coating 22 of powder or grit has been added to the surface of the base coat 21. The base coats 21 and 22 close the gap at 24 created between the edge of the groove 25 and the absorber tube 16.

Thus, while the structure of Deakin may look similar to that of applicants' collector module, there are, indeed significant differences.

With the present invention, the absorber panel is a relatively rigid "sheet metal panel" which supports the capillary tubes by means of a "non-metallic, elastic adhesive layer". The result is a "self-supporting

"heliothermal flat collector module" that can be used directly as a roof covering in place of the usual zinc panels, without glazing.

The patent to Bloor et al. discloses a clip assembly 20 for securing an element, such as tubes 18, to the edge of a roof tile. There is nothing in this patent to suggest the self-supporting collector module structure recited in applicants' claim 1.

The patent to Graham discloses a solar collector having a plate 10 formed in Ω-shaped sections to surround and hold the capillary tubes in thermal contact. There is no mention at all in this patent of the use of an adhesive.

Finally, Hyman discloses an absorber plate arranged in a frame with openings 18 defining flow passages (Fig. 4). The absorber plate consists of two copper sheets (one flat and one formed) which holds the tubes between them. Again, no adhesive is used.

In conclusion, therefore, none of the references discloses or suggests either the problem encountered with collector panels of the type disclosed by the applicants, or its solution. Further, none of the references discloses or suggests the structure now recited in applicants' amended claim 1.

All of the formal issues raised by the Examiner are believed to have been overcome by applicants' Preliminary Amendment filed on the same date as this application. A telephone conference with the Examiner held on March 6, 2007 confirmed the fact that this Preliminary Amendment was overlooked.

Since all of the remaining claims in this application depend from claim 1, and claim 1 is believed to be allowable over the prior art, this application is believed to be in condition for immediate allowance. A formal Notice of Allowance is accordingly respectfully solicited.

Respectfully submitted,

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JUNE 4, 2007

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By

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